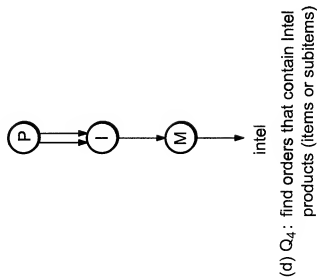
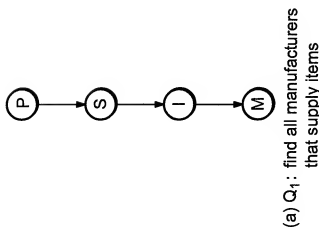
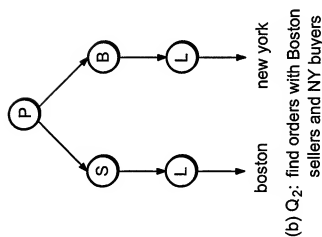
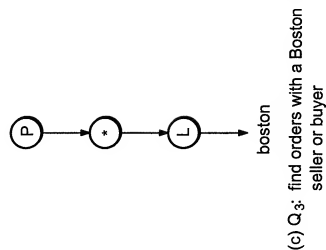


100 ↗

<! ELEMENT	purchases	(purchase*)
<! ELEMENT	purchase	(seller, buyer)
<! ATTRIST	seller	ID ID location CDATA name CDATA >
<! ELEMENT	seller	(item*)
<! ATTRIST	buyer	ID ID location CDATA name CDATA >
<! ELEMENT	item	(item*)
<! ATTRIST	item	name CDATA manufacturer CDATA >

(Prior Art)
FIG. 1



(Prior Art)
FIG. 2

intel

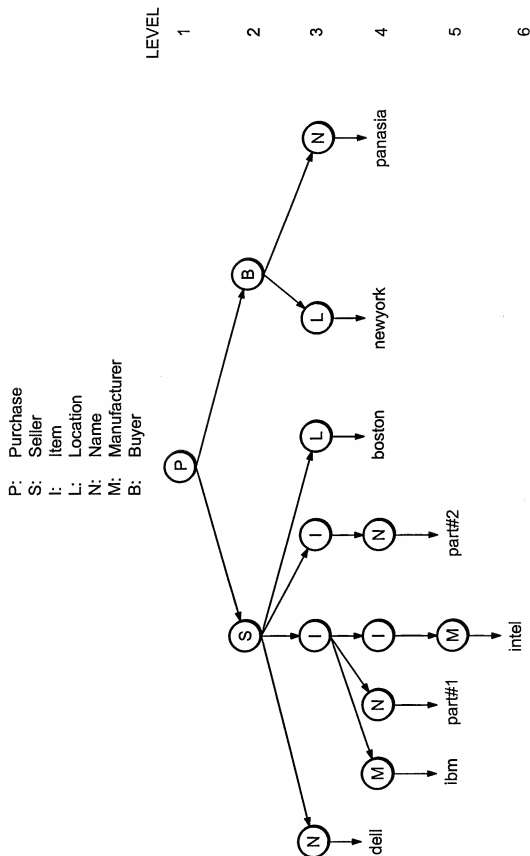
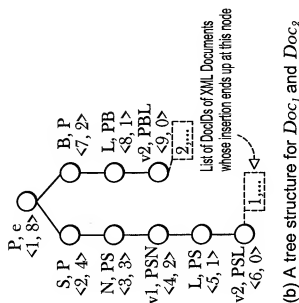


FIG. 3

$$\mathcal{D} = \begin{array}{l} (P, \epsilon), \underline{(S, P)}, (N, PS), (v_1, PSN), (I, PS), (M, PSD), \\ \underline{(v_2, PSIM)}, (N, PSD), (v_3, PSIN), (I, PSD), (M, PSID), \\ (v_4, PSIM), (I, PS), (N, PSD), (v_5, PSIN), \underline{(L, PS)}, \\ \underline{(v_6, PSL)}, \underline{(B, P)}, \underline{(L, PB)}, \underline{(v_7, PBL)}, (N, PB), (v_8, PBN) \end{array}$$

FIG. 4



$$Doc_1 : (P, \epsilon)(S, P)(N, PS)(v_1, PSN)(L, PS)(v_2, PSL)$$

$$Doc_2 : (P, \epsilon)(B, P)(L, PB)(v_2, PBL)$$

$$Q_1 : (P, \epsilon)(B, P)(L, PB)(v_2, PBL)$$

$$Q_2 : (P, \epsilon)(L, P^*)(v_2, P^*L)$$

(a) XML docs and queries in structure-encoded sequences

FIG. 5

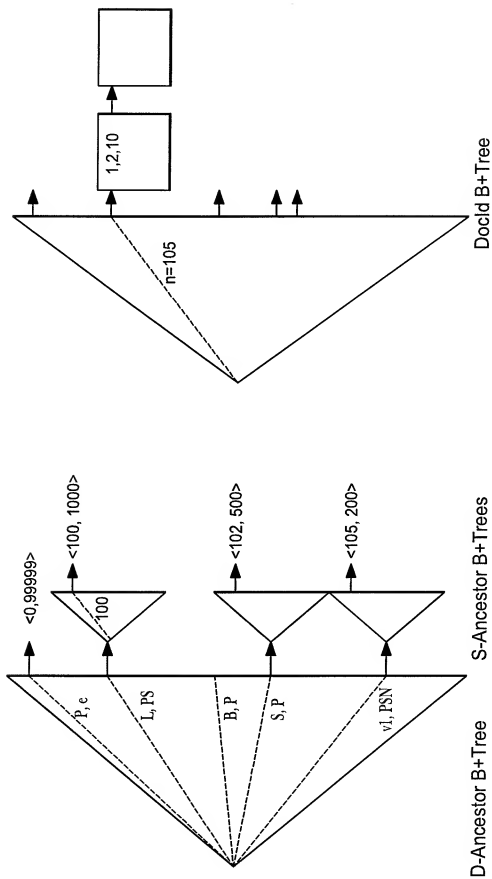
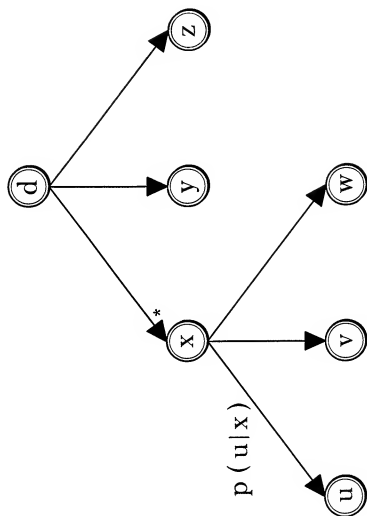
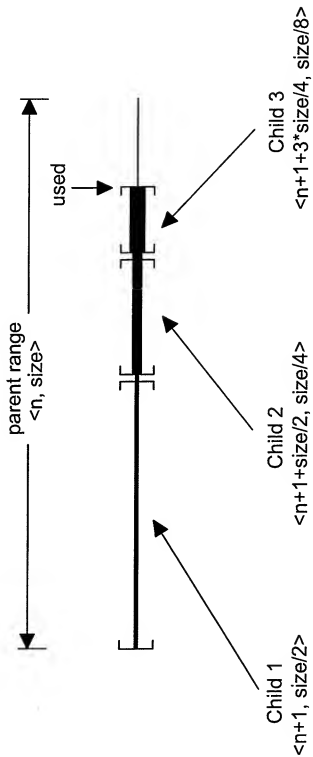
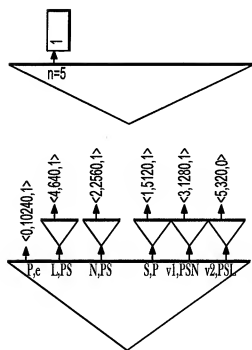


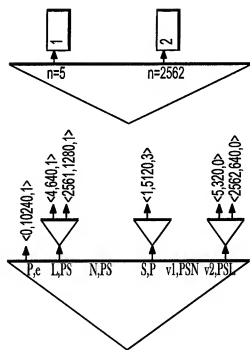
FIG. 6

**FIG. 7**

**FIG. 8**



D-Ancessor B+Tree S-Ancessor B+Trees Docid B+Tree
(a) Index containing Doc_1



D-Ancessor B+Tree S-Ancessor B+Trees Docid B+Tree
(b) Changes caused by the insertion of Doc_2

FIG. 9